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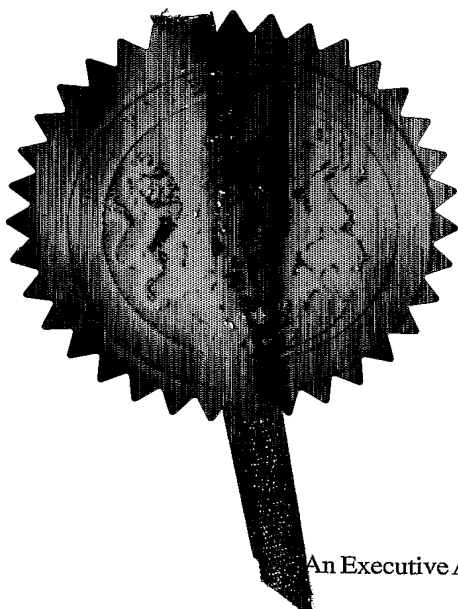
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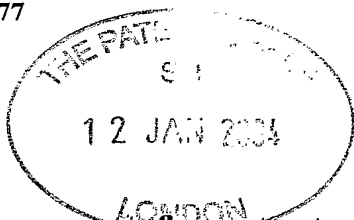
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Patents ADP number (if you know it) If the applicant is a corporate body, give the country/state of its incorporation		878696400 Australia	
4. Title of the invention		Matching Numerical Values	
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41 SN

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P513988GB

Matching Numerical Values

The present invention relates to the matching of numerical values, and finds application, by way of example only, in a game.

5

Games are known in which contestants attempt to identify a secret number by submitting numbers to a (human) game controller and receiving back information on the relation, or lack of relation, between the submitted number and the secret number.

10 It is an object of the present invention to provide a method of, and system for, matching numerical values, for example in the context of a game, that minimises or even eliminates the use of a human controller.

The present invention involves the combination of a telephone line, using Dual Tone
15 Multi Frequency (DTMF) tone signals generated by operation of the keypad of a telephone, to transmit a sequence to a computer, which then converts the DTMF signal back to a numerical sequence and compares that with a stored numerical code. The computer is advantageously linked with a media broadcasting station, such that the transcribed incoming DTMF signal, together with any correlation with the stored code,
20 may be broadcast to a wide audience.

In one embodiment of the present invention, there is provided a method of identifying a numerical code stored in a computer, wherein a telephone link is established between a remote telephone and the computer, wherein an operator of the telephone causes a
25 signal comprising DTMF tones to be transmitted along the telephone link to the computer by selectively actuating keys of a keypad of the telephone, and wherein upon receipt of the DTMF tone signal, the computer transcribes the tones into their associated sequential numerical values and compares those values with the stored numerical code.

30

The computer may indicate what correlation, if any, exists between the transcribed numerical values and the stored code, even if the correlation is incomplete.

5 Preferably, the computer is associated with a broadcasting medium, such as radio or television, and the computer arranges a broadcast of the transcribed numerical values, and advantageously also any correlation with the stored numerical code.

10 Consequently, if the transcribed numerical values do not exactly match the stored code, an operator of another telephone, using another telephone link, may send a different DTMF tone signal to the computer in an attempt to match the numerical code stored in the computer.

15 Further operators may interactively submit DTMF tone signals along respective telephone links to the computer following broadcast details of a previous mismatch, until the computer detects, and preferably broadcasts, an exact match with the stored code.

20 In this way, the matching attempts of successive operators of telephones, transmitting DTMF tones along telephone links, may be broadcast to a wide audience after each attempt, by means of the operation of the computer.

25 The code that is initially stored within the computer is advantageously generated at random, and is not identified until the computer detects an exact match therewith. In this way, any human interference with the matching can be avoided.

The code may comprise four numbers, or more or fewer numbers. The numbers may represent other parameters, such as letters (e.g. as used in mobile telephone text messaging), symbols, colours or sounds, for example.

30 Preferably, the specification of the computer, and for example the speed of its processor, is such that the DTMF tones received along the telephone link are detectable and transcribable using the built-in sound card of the computer, that is to say, without

the need for a modem. An Intel Pentium 4 processor, for example, is suitable for such an application of the present invention.

It will be appreciated that the combination of a telephone link, using DTMF tones, with a computer associated with media broadcasting, that is preferably envisaged in the present invention, involves the use of a telephone hybrid device, which may be analogue or digital, for separating the electric current signal that powers the telephone from the audio signal that comprises the DTMF tones, thus allowing the broadcasting of the audio signal.

It will be appreciated that broadcasting may involve a transmitter and a receiver aerial, or a cable or a satellite link.

In another embodiment of the present invention, there is provided an electronic system for matching a signal comprising a sequence of DTMF tones representing numerical values received along a telephone line with a numerical code stored within the system.

The system may comprise a computer having a sound card responsive to the DTMF tone signal so as to transcribe the tones into an associated sequence of numbers.

Advantageously, the computerised system is linked with, or forms part of a media (radio or television) broadcasting system, whereby the numerical sequence derived from the received DTMF tones may be broadcast, and whereby a correlation, or a lack of correlation, between the derived numerical sequence and the stored numerical code may be broadcast. The system may be used iteratively, for receiving successive DTMF tones from different sources, preferably telephone keypads, subsequent to each broadcast, until the stored CODE is identified.

An embodiment of the present invention will now be described, by way of example, with reference to the accompanying schematic system diagram, in the context of a game.

Referring to the drawing, a broadcasting station BS is arranged to broadcast to an audience via a transmitter TR, for reception on a radio receiver (not shown) in the normal manner. The broadcasting station BS is arranged to broadcast a game in which its listeners participate, and respond thereto interactively by means of their remote telephone keypads T1, T2, T3, T4 and T5, for example, which are linked to the broadcast station BS by telephone lines TL1, TL2, TL3, TL4, TL5 respectively. Each telephone keypad T1-T5 is equipped with the usual ten numerical touch tone buttons 0, 1, ... 8, 9.

At the broadcasting station BS, a computer C is arranged to randomly generate and store a four digit number as a CODE to be identified by the participants in the game. The game host will broadcast over the transmitter TR the fact that a CODE has been generated, and invite participants to submit entries so as to identify the CODE, and consequently to win a prize. A participant, for example associated with the telephone keypad T1, can then telephone the broadcasting station BS, and establish a standard telephone link along the line TL1 therewith. When invited by the game host, the operator of the keypad T1 enters the four digits that he guesses correspond to the stored CODE. Entry is effected by pressing appropriate ones of the keys 0 ... 9 of the keypad T1, and this generates a sequence of four DTMF tones that are transmitted along the telephone line TL1 to the computer C at the broadcasting station BS.

The computer C, using its internal sound card associated with its Intel Pentium 4 processor, converts the sequence of four DTMF tones back into the corresponding numbers, and automatically arranges for the numbers, in the sequence received, to be broadcast by the transmitter TR to the audience of the broadcasting station BS. Additionally, the computer C compares the sequence of numbers received with the stored CODE and then also arranges to broadcast from the transmitter TR any correlation between the received digits and the CODE. For example, if the randomly generated and stored CODE were 1234 and the entry made via the keypad terminal T1 were converted from its DTMF tones to the numerical sequence 1574, the computer would recognise that the first and fourth digits were correct, in the sense that they provide a numerical match and also appear at the same position in the sequence, and

that the second and third digits did not match. The computer is then arranged to broadcast via the transmitter TR the fact that two of the four digits received from the terminal T1 and broadcasted provided a match with the stored CODE, but without identifying the value or position in the sequence of those two digits. Other members of the audience may then in turn, by establishing links from their respective keypad terminals T2 ... T5 along the respective telephone lines TL2 ... TL5 subsequently enter their own attempts on their own keypads in order to identify the stored CODE. It will be appreciated, that successive attempts will be made in the knowledge of the broadcasting of any matching of digits by previous attempts with the stored CODE. The process carries on iteratively, until a participant correctly identifies the CODE, that is to say keys into his keypad TX the correct four digits in the correct order corresponding to the stored CODE. At this point, the game ends and a prize is awarded. A further game can then be instigated, by having the computer C generate at random a new CODE.

In the embodiment described, use of only the keys 0, ... 9 of the telephone keypad has been described. However, it is envisaged that the * and/or # keys may also be activated during the communication with the computer C of the broadcasting station BS. For example, depression of the * key may be required to activate the tone detection process of the computer software, so that the participant may then be allowed to play the game. These keys may be used for effecting commands, choices or navigation of the software or the game by the participant.

It will be appreciated that the system described above contains other, standard, components that are not shown in the schematic diagram, but which will be apparent to one skilled in the art. Examples of such components are a telephone hybrid device, a telephone interface, and a broadcast console / mixer, which are required to enable the DTMF signals to be sent as a usable audio signal to the sound card of the computer, triggering various audio files which the software replays through the audio output stage of the sound card and back to the input channel of the broadcast console / mixer so that all audio can be broadcast. Additionally, it will be understood that the sound card,

also acts as the output stage which plays the audio files as a result of the tones detected, and which are also broadcast.

5 Although reference is made in the above embodiment to identifying a numerical code, it will be appreciated that the random number generated by the computer may represent other parameters, and that the corresponding numbers or symbols on the telephone keypads would then have the same correspondence with those parameters.

